AMENDMENTS TO THE CLAIMS

Please amend Claims 5, 13, 21-23 and 27 as indicated below.

1. **(Original)** A master oscillator power amplifier comprising:

a mode-locked fiber oscillator comprising a pair of reflective optical elements that form an optical resonator, at least one of said reflective optical elements being partially transmissive and having a reflection coefficient that is less than about 60%, said mode-locked fiber oscillator outputting a plurality of optical pulses; and

a fiber amplifier optically connected to said mode-locked fiber oscillator through a bi-directional optical connection such that light from said mode-locked fiber oscillator can propagate to said fiber amplifier and light from said fiber amplifier can propagate to said mode-locked fiber oscillator.

2. **(Original)** The pulsed fiber laser of Claim 1, wherein said mode-locked fiber oscillator is optically connected to said fiber amplifier through an optical fiber.

3. **(Original)** The pulsed fiber laser of Claim 1, further comprising one or more polarization maintaining optical fiber components.

4. **(Original)** The pulsed fiber laser of Claim 1, further comprising dispersion control elements to reduce dispersion.

5. **(Currently Amended)** The pulsed fiber laser of Claim 4, wherein said partially transmissive reflector comprises a Bragg grating having dispersion that reduces aggregate dispersion in said mode-locked fiber oscillator.

6. **(Original)** The pulsed fiber laser of Claim 1, further comprising a pump source optically coupled to said mode-locked fiber oscillator and said fiber amplifier to pump said fiber oscillator and said fiber amplifier.

7. **(Original)** The pulsed fiber laser of Claim 1, further comprising a first pump source optically coupled to said mode-locked fiber oscillator and a second pump optically coupled to said fiber amplifier.

8. **(Original)** The pulsed fiber laser of Claim 1, wherein said mode-locked fiber oscillator comprises a passive mode-locking device.

9. **(Original)** The pulsed fiber laser of Claim 1, further comprising a pulse compressor optically coupled to receive optical pulses output from said fiber amplifier.

10. **(Original)** A method of producing laser pulses, said method comprising:

propagating optical energy back and forth through a gain fiber by reflecting light from a pair of reflective elements on opposite ends of said gain fiber, less than about 60% of said light in said gain fiber being reflected back into said gain fiber by one of said reflectors, said pair of reflective elements together forming a resonant cavity that supports a plurality of resonant optical modes;

substantially mode-locking said resonant optical modes to produce a train of pulses;

propagating said train of optical pulses from said laser cavity through said one of said reflectors to a fiber amplifier along a bi-directional optical path from said laser cavity to said fiber amplifier; and

amplifying said laser pulses in said fiber amplifier.

11. **(Original)** The pulsed fiber laser of Claim 10, further comprising maintaining the polarization of said train of pulses using one or more polarization maintaining components.

12. **(Original)** The method of Claim 10, further comprising compressing said laser pulses.

13. **(Currently Amended)** A fiber-based master oscillator power amplifier comprising:

a mode-locked fiber oscillator comprising a resonant cavity and a gain medium, said mode-locked fiber oscillator producing a plurality of optical pulses;

a fiber amplifier comprising a gain fiber; and

a bi-directional optical path between said mode-locked fiber oscillator and said fiber amplifier permitting light from said mode-locked fiber oscillator to propagate to said fiber amplifier and light from said fiber amplifier to propagate to said mode-locked fiber oscillator[[.]],

wherein said mode-locked fiber oscillator comprises a first segment of fiber and said fiber amplifier comprise a second segment of optical fiber and said first and second segments form a substantially continuous length of optical fiber.

14. **(Original)** The master oscillator power amplifier of Claim 13, wherein said first and second segments are spliced together.

15. **(Original)** The master oscillator power amplifier of Claim 13, wherein said resonant cavity comprises first and second reflective optical elements, spontaneous emission from said fiber amplifier propagating along said bi-directional optical path to said mode-locked fiber oscillator and at least partially reflecting from said second reflective optical element back to said fiber amplifier.

16. **(Original)** The pulsed fiber laser of Claim 13, further comprising polarization maintaining components for maintaining polarization.

17. **(Original)** The pulsed fiber laser of Claim 13, wherein said gain fiber comprises polarization maintaining optical fiber.

18. **(Original)** The pulsed fiber laser of Claim 13, wherein said mode-locked fiber oscillator further comprises optical components having dispersion that reduce dispersion in said mode-locked fiber oscillator.

19. **(Original)** The master oscillator power amplifier of Claim 13, wherein said second reflective optical element comprises a Bragg grating.

20. **(Original)** A method of producing laser pulses, said method comprising:

substantially mode-locking longitudinal modes of a laser cavity to produce laser pulses;

propagating said laser pulses from said laser cavity to a fiber amplifier;

amplifying said laser pulses in said fiber amplifier;

receiving amplified spontaneous emission emitted from said fiber amplifier at said laser cavity, a first portion of said spontaneous emission entering said laser cavity; and

retro-reflecting a second portion of said amplified spontaneous emission from said laser cavity back to said fiber amplifier to cause said second portion to be directed away from said cavity toward said fiber amplifier.

21. **(Currently Amended)** The pulsed fiber laser of Claim 20, <u>further comprising</u> propagating said pulses through a polarization maintaining optical component.

22. **(Currently Amended)** The pulsed fiber laser of Claim 20, <u>further comprising</u> propagating said pulses through a polarization maintaining delivery fiber.

23. **(Currently Amended)** The pulsed fiber laser of Claim 20, <u>further comprising</u> offsetting positive dispersion with negative dispersion to reduce the width of said laser pulses.

24. **(Original)** The method of Claim 20, wherein said amplified stimulated emission is retro-reflected back toward said fiber amplifier by a partially transmissive reflective optical element that forms said laser cavity.

25. **(Original)** The method of Claim 24, wherein said amplified stimulated emission is retro-reflected back by a Bragg grating toward said fiber amplifier.

26. **(Original)** The method of Claim 20, further comprising compressing said laser pulses.

27. **(Currently Amended)** A fiber master oscillator power amplifier comprising:

a mode-locked fiber oscillator comprising a first portion of optical fiber and a pair of fiber reflectors spaced apart to form a fiber optic resonator in said first fiber portion, at least one of said fiber reflectors comprising a partially transmissive fiber reflector, said mode-locked fiber oscillator outputting a plurality of optical pulses; and

a fiber amplifier comprising a second portion of optical fiber optically connected to said partially transmissive fiber reflector to receive said optical pulses from said mode-locked oscillator, said second portion of optical fiber having gain to amplify said optical pulses,

wherein said first portion of optical fiber, said partially transmissive fiber reflector, and said second portion of optical fiber comprise a continuous path formed by optical fiber uninterrupted by non-fiber optical components.

28. **(Original)** The fiber master oscillator power amplifier of Claim 27, wherein said at least one of said fiber reflectors has a reflection coefficient that is less than about 60%.

29. **(Original)** The fiber master oscillator power amplifier of Claim 27, wherein said first portion of optical fiber in said mode-locked fiber oscillator is doped to provide gain.

30. **(Original)** A master oscillator power amplifier comprising:

a mode-locked fiber oscillator comprising a pair of reflective optical elements that form an optical resonator, at least one of said reflective optical elements comprising a partially transmissive Bragg fiber grating having a reflection coefficient that is less than about 60%, said mode-locked fiber oscillator outputting a plurality of optical pulses; and

a fiber amplifier optically connected to said oscillator through an optical connection to said partially transmissive Bragg fiber grating.

31. **(Original)** A master oscillator power amplifier comprising:

a mode-locked fiber oscillator comprising a pair of reflective optical elements that form an optical resonator, at least one of said reflective optical elements comprising a partially transmissive Bragg fiber grating having a reflection coefficient that is less than about 60%, said mode-locked fiber oscillator outputting a plurality of optical pulses; and

a fiber amplifier optically connected to said oscillator through an optical connection to said partially transmissive Bragg fiber grating.

32.-87. **(Cancelled)**